Appendix A
Legal Requirements Regarding School Improvement Planning

Several laws specify the content of written plans to improve schools. The requirements are as follows:

Public Schools Accountability Act

Under this Act schools are ranked on their Academic Performance Index (API). If a school is low in the rankings, the school will have an opportunity through the Immediate Interventions/Underperforming Schools Program to participate in a funded planning process in which the school assesses the learning needs of its students and prepares an action plan to improve their academic achievement. Although the express use of educational technology is not required, *Education Code* Section 52054(e) does require the following: "The school action plan shall focus on improving pupil academic performance, improving the involvement of parents and guardians, improving the effective and efficient allocation of resources and management of the school, and identifying and developing solutions that take into account the underlying causes for low performance by pupils." The thoughtful use of education technology can help in all of these areas. A local technology plan could be easily woven in to support the school action plan.

School-Based Coordinated Categorical Program

Under this program, the school site council at any school receiving categorical funding must prepare a school plan to meet the instructional needs and accommodate the learning styles of all students, including an annual budget to expend the categorical funding provided the site. The required contents of this plan are spelled out in *Education Code* Section 52853. As with the Immediate Interventions/Underperforming Schools Program, this plan does not specifically require the inclusion of the use of education technology.

Nonetheless, education technology needs to be considered when the school site council plans the "curricula, instructional strategies, and materials responsive to the individual needs and learning styles of each pupil." Additionally, a local technology plan could be easily woven in to support this school site plan because the required components of the school site plan are nearly the same as the components of the local education technology plans outlined in this guide.

Improving America's Schools Act

School districts receiving federal Title I funds were required in 1995 to develop five-year local improvement plans. These plans focus on five themes: Standards and Assessment, Teaching and Learning, Professional Development, Family and Community Partnerships, and Funding and Governance. Several themes specifically refer to the use of technology. Under Teaching and Learning, school districts consider how they will provide all students with the opportunity to use technology that enhances curriculum and instruction. Under Professional Development, the plan needs to enable teachers to develop further expertise in subject content, teaching strategies, uses of technologies, and other essential elements in teaching according to high standards.

Congress is considering legislation to revamp and reauthorize the Improving America's Schools Act. Therefore the planning requirement may change. The latest federal requirements for school planning are posted on the California Department of Education Web site <*www.cde.ca.gov/iasa/*>.

Appendix B
Information Literacy

There is no shortage of information in this Information Age. People are faced with diverse, abundant information choices—in their academic studies, in the workplace, and in their personal lives. Information is available through libraries, community resources, special-interest organizations, the media, and the Internet. Increasingly, information comes in unfiltered, unedited formats, raising questions about its authenticity, validity, and reliability. The uncertain quality and expanding quantity of information pose large challenges for society. The sheer abundance of information will not in itself create a more informed citizenry without a complementary cluster of abilities necessary to use information effectively.

This unprecedented deluge of information, combined with rapid developments in technology for storing, organizing, and accessing information, has led to the emergence of a new type of literacy—information literacy. To be information-literate, "a person must be able to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information."[1]

An information-literate person is one who:

- Recognizes that accurate and complete information is the basis for intelligent decision making
- Recognizes the need for information
- Formulates questions based on information needs
- Identifies potential sources of information
- Develops successful strategies to search for information
- Accesses many sources of information, including computer-based and other technologies
- Evaluates information
- Organizes information for practical application
- Integrates new information into an existing body of knowledge
- Uses information in critical thinking and problem solving[2]

[1] *American Library Association Presidential Committee on Information Literacy.* Chicago: American Library Association, 1989.

[2] Christine S. Doyle. *Information Literacy in an Information Society: A Concept for the Information Age.* Syracuse, New York: ERIC Clearinghouse on Information and Technology, 1997.

Information literacy is not a subject unto itself. It crosses all disciplines, learning environments, and levels of education. The school library is a natural partner in the integration of information literacy because it, too, crosses all disciplines and levels. The California content standards provide a structure for students to learn, apply, and practice information literacy. While mastering content, students extend their investigations, become more self-directed, and assume greater control over their own learning. Students who are effective users of information and ideas are equipped to be learners for life. Ultimately, information-literate students are those who have learned *how* to learn while learning the *content* as defined by the standards.

Information literacy skills are embedded in the *English–Language Arts Content Standards* adopted by the State Board of Education. Selected standards pertaining to information literacy are shown in the following table.

Grade	Strand	English–Language Arts Content Standard
K	Reading	1.3 Understand that printed materials provide information.
1	Listening and Speaking	1.2 Ask questions for clarification and understanding.
2	Writing	1.1 Group related ideas and maintain a consistent focus. 1.3 Understand the purposes of various reference materials (e.g., dictionary, thesaurus, atlas).
3	Reading	2.1 Use titles, tables of contents, chapter headings, glossaries, and indexes to locate information in text. 2.6 Extract appropriate and significant information from the text, including problems and solutions.
	Writing	1.3 Understand the structure and organization of various reference materials (e.g., dictionary, thesaurus, atlas, encyclopedia).

Grade	Strand	English–Language Arts Content Standard
4	Reading	2.4 Evaluate new information and hypotheses by testing them against known information and ideas.
	Writing	1.5 Quote or paraphrase information sources, citing them appropriately. 1.6 Locate information in reference texts by using organizational features (e.g., prefaces, appendixes). 1.7 Use various reference materials (e.g., dictionary, thesaurus, card catalog, encyclopedia, online information) as an aid to writing. 1.8 Understand the organization of almanacs, newspapers, and periodicals and how to use those print materials.
5	Reading	2.1 Understand how text features (e.g., format, graphics, sequence, diagrams, illustrations, charts, maps) make information accessible and usable. 2.3 Discern main ideas and concepts presented in texts, identifying and assessing evidence that supports those ideas.
	Writing	1.3 Use organizational features of printed text (e.g., citations, end notes, bibliographic references) to locate relevant information.
6	Reading	2.1 Identify the structural features of popular media (e.g., newspapers, magazines, online information) and use the features to obtain information.
	Writing	1.4 Use organizational features of electronic text (e.g., bulletin boards, databases, keyword searches, e-mail addresses) to locate information. 2.3 Write research reports: a. Pose relevant questions with a scope narrow enough to be thoroughly covered. b. Support the main idea or ideas with facts, details, examples, and explanation from multiple authoritative sources (e.g., speakers, periodicals, online information searches). c. Include a bibliography.

Grade	Strand	English–Language Arts Content Standard
7	Reading	2.2 Locate information by using a variety of consumer, workplace, and public documents. 2.6 Assess the adequacy, accuracy, and appropriateness of the author's evidence to support claims and assertions, noting instances of bias and stereotyping.
	Writing	1.4 Identify topics; ask and evaluate questions; and develop ideas leading to inquiry, investigation, and research. 1.5 Give credit for both quoted and paraphrased information in a bibliography by using a consistent and sanctioned format and methodology for citations. 2.3 Write research reports: a. Pose relevant and tightly drawn questions about the topic. b. Convey clear and accurate perspectives on the subject. c. Include evidence compiled through the formal research process (e.g., use of a card catalog, *Reader's Guide to Periodical Literature*, a computer catalog, magazines, newspapers, dictionaries).
8	Reading	2.1 Compare and contrast the features and elements of consumer materials to gain meaning from documents (e.g., warranties, contracts, product information, instruction manuals). 2.6 Use information from a variety of consumer, workplace, and public documents to explain a situation or decision and to solve a problem.
	Writing	1.4 Plan and conduct multiple-step information searches by using computer networks and modems. 1.5 Achieve an effective balance between researched information and original ideas. 2.3 Write research reports: a. Define a thesis. b. Record important ideas, concepts, and direct quotations from significant information sources and paraphrase and summarize all perspectives on the topic, as appropriate. c. Use a variety of primary and secondary sources and distinguish the nature and value of each. d. Organize and display information on charts, maps, and graphs.

Grade	Strand	English–Language Arts Content Standard
9 and 10	Reading	2.1 Analyze the structure and format of functional workplace documents, including the graphics and headers, and explain how authors use the features to achieve their purposes.
	Writing	1.3 Use clear research questions and suitable research methods (e.g., library, electronic media, personal interview) to elicit and present evidence from primary and secondary sources.
		1.4 Develop the main ideas within the body of the composition through supporting evidence (e.g., scenarios, commonly held beliefs, hypotheses, definitions).
		1.5 Synthesize information from multiple sources and identify complexities and discrepancies in the information and the difference perspectives found in each medium (e.g., almanacs, microfiche, news sources, in-depth field studies, speeches, journals, technical documents).
		1.6 Integrate quotations and citations into a written text while maintaining the flow of ideas.
		1.7 Use appropriate conventions for documentation in the text, notes, and bibliographies by adhering to those in style manuals (e.g., *Modern Language Association Handbook, The Chicago Manual of Style)*.
	Speaking	2.2 Deliver expository presentations….
11 and 12	Reading	2.3 Verify and clarify facts presented in other types of expository texts by using a variety of consumer, workplace, and public documents.
		2.6 Critique the power, validity, and truthfulness of arguments set forth in public documents; their appeal to both friendly and hostile audiences; and the extent to which the arguments anticipate and address reader concerns and counterclaims (e.g., appeal to reason, to authority, to pathos and emotion.)
		1.6 Develop presentations by using clear research questions and creative and critical research strategies (e.g., field studies, oral histories, interviews, experiments, electronic sources).
	Writing	2.4c Explain the perceived reason or reasons for the similarities and differences in historical records with information derived from primary and secondary sources to support or enhance the presentation.

Information literacy skills are also embedded in the *History–Social Science Content Standards for California Public Schools, Kindergarten Through Grade Twelve* (2000).

Students in kindergarten through grade five demonstrate the following skills:

1. Students differentiate between primary and secondary sources.
2. Students pose relevant questions about events they encounter in historical documents, eyewitness accounts, oral histories, letters, diaries, artifacts, photographs, maps, artworks, and architecture.
3. Students distinguish fact from fiction by comparing documentary sources on historical figures and events with fictionalized characters and events.

Standards pertaining to information literacy as they appear in the *History– Social Science Content Standards* for kindergarten through grade five are shown in the following table:

Grade	History–Social Science Content Standard
K	K.4.1 Determine the relative locations of objects using the terms near/far, left/right, behind/in front.
1	1.5.3 Compare the beliefs, customs, ceremonies, traditions, and social practices of the varied cultures, drawing from folklore.
2	2.1.2 Compare and contrast their daily lives with those of their parents, grandparents, and/or guardians.
3	3.3.1 Research the explorers who visited here, the newcomers who settled here, and the people who continue to come to the region, including their cultural and religious traditions and contributions.
4	4.3.3 Analyze the effects of the Gold Rush on settlements, daily life, politics, and the physical environment (e.g., using biographies of John Sutter, Mariano Guadalupe Vallejo, Louise Clapp). 4.4.9 Analyze the impact of twentieth-century Californians on the nation's artistic and cultural development, including the rise of the entertainment industry (e.g., Louis B. Meyer, Walt Disney, John Steinbeck, Ansel Adams, Dorothea Lange, John Wayne).
5	5.2.2 Explain the aims, obstacles, and accomplishments of the explorers, sponsors, and leaders of key European expeditions and the reasons Europeans chose to explore and colonize the world.

Students in grades six through eight demonstrate the following skills:

1. Students frame questions that can be answered by historical study and research.
2. Students distinguish fact from opinion in historical narratives and stories.
3. Students distinguish relevant from irrelevant information, essential from incidental information, and verifiable from unverifiable information in historical narratives and stories.
4. Students assess the credibility of primary and secondary sources and draw sound conclusions from them.
5. Students detect the different historical points of view on historical events and determine the context in which the historical statements were made (the questions asked, sources used, author's perspectives).

Standards pertaining to information literacy as they appear in the *History–Social Science Content Standard*s for grades six through eight are shown in the following table.

Grade	History–Social Science Content Standard
6	6.1 Students describe what is known through archaeological studies of the early physical and cultural development of humankind from the Paleolithic era to the agricultural revolution. 6.6 Students analyze the geographic, political, economic, religious, and social structures of the early civilizations of China.
7	7.6 Students analyze the geographic, political, economic, religious, and social structures of the civilizations of Medieval Europe. 7.7 Students compare and contrast the geographic, political, economic, religious, and social structures of the Meso-American and Andean civilizations.
8	8.2 Students analyze the political principles underlying the U.S. Constitution and compare the enumerated and implied powers of the federal government. 8.3 Students understand the foundation of the American political system and the ways in which citizens participate in it.

Students in grades nine through twelve demonstrate the following skills:

1. Students distinguish valid arguments from fallacious arguments in historical interpretations.
2. Students identify bias and prejudice in historical interpretations.
3. Students evaluate major debates among historians concerning alternative interpretations of the past, including an analysis of authors' use of evidence and the distinctions between sound generalizations and misleading oversimplifications.
4. Students construct and test hypotheses; collect, evaluate, and employ information from multiple primary and secondary sources; and apply it in oral and written presentations.

Additional standards pertaining to information literacy appear in the *History–Social Science Content Standard*s for grades nine through twelve:

Grade	History–Social Science Content Standard
10	10.1 Students relate the moral and ethical principles in ancient Greek and Roman philosophy, in Judaism, and in Christianity to the development of Western political thought. 10.4 Students analyze patterns of global change in the era of New Imperialism in at least two of the following regions or countries: Africa, Southeast Asia, China, India, Latin America, and the Philippines.
11	11.3 Students analyze the role religion played in the founding of America, its lasting moral, social, and political impacts, and issues regarding religious liberty. 11.4 Students trace the rise of the United States to its role as a world power in the twentieth century.
12	12.1 Students explain the fundamental principles and moral values of American democracy as expressed in the U.S. Constitution and other essential documents of American democracy. 12.3 Students evaluate and take and defend positions on what the fundamental values and principles of civil society are (i.e., the autonomous sphere of voluntary personal, social, and economic relations that are not part of government), their interdependence, and the meaning and importance of those values and principles for a free society.

Appendix C
The Design Elements for High-Quality Professional Development

1. **Uses student performance and achievement data, including student feedback, teacher observation, analysis of student work and test scores, as part of the process for individual and organizational learning**

   Sources of data and information include the results and outcomes from multiple forms of assessment. In addition, information about the students' cultural context and learning history is included. The purpose of using a variety of data sources is for teachers to know their students well and then to use that knowledge to plan professional development that will increase students' learning.

2. **Uses a coherent, long-term professional development planning process connected to the school plan that reflects both site-based priorities and individual learning needs**

   Professional development planning is an ongoing process that is closely linked to other planning activities at the site—those that take place for Program Quality Review, Focus on Learning, school improvement, and various initiatives. Plans and initiatives are linked systematically and overlap with whole school goals. The planning process is ongoing, and changes are made as a result of teacher feedback and formative evaluation of teacher learning.

3. **Provides time for professional learning to occur in a meaningful manner**

   Time is the greatest stumbling block for providing relevant and timely high-quality learning opportunities for teachers—time to plan, reflect, design lessons together, and examine and make meaning of content and teaching standards. Teachers need time both on-site and away from school to pursue learning opportunities.

4. **Respects and encourages the leadership development of teachers**

   There are a variety of leadership roles for teachers: planning/governance at the site, mentoring new teachers, acting as consulting teachers, coordinating alliances and learning networks among teachers, developing curriculum, and advising district and state policymakers. The *California Standards for the Teaching Profession* (CSTP) and the *National Board for Professional Teaching Standards* (NBPTS) inform local districts about ways to develop leadership roles that will model high standards for teaching.

5. **Develops, refines, and expands teachers' pedagogical repertoire, content knowledge, and the skill to integrate both**

   Professional development strategies such as workshops, institutes, networks, and academies, as well as job-embedded activities, are related to the *California Standards for the Teaching Profession* (CSTP) and are helpful in closing the achievement gap between the highest- and lowest-performing groups of students.

6. **Provides for and promotes the use of continuous inquiry and reflection**

   Through inquiry and reflection, teachers come to understand content standards, self-assess their teaching with respect to the *California Standards for the Teaching Profession* (CSTP) and examine beliefs and assumptions that impede their success with students. Strategies for ongoing inquiry and reflection include participating in action research, creating teaching portfolios, keeping journals, examining student work and student data, reflecting with a colleague or coach, and conducting studies of individual students.

7. **Provides for collaboration and collegial work, balanced with opportunities for individual learning**

   A collaborative learning culture is central to the professional development enterprise and is characterized by activities such as study groups, joint planning and problem solving, peer coaching, interdisciplinary or team teaching, and shared learning from off-site trainings or from participation in alliances and

networks. All of these activities are ongoing and help individual teachers address their personal learning plans and, at the same time, extend the learning to others at the site.

8. **Follows the principles of good teaching and learning, including providing comfortable, respectful environments conducive to adult learning**

   The conditions that support powerful learning for adults include attending to what is learned, how it is learned, and where it is learned. The Concerns-Based Adoption Model (CBAM) is one strategy for determining teachers' levels of concern and, subsequently, designing appropriate learning strategies.

9. **Creates broad-based support of professional development from all sectors of the organization and community through reciprocal processes for providing information and soliciting feedback**

   Partnerships with parents, community members, and institutions and agencies in the broader community can provide important resources for teachers and administrators. Understanding and support for professional development, both within the educational community and with the public, can be built through communication, information sharing, and mutual respect and trust.

10. **Builds in accountability practices and evaluation of professional development programs to provide a foundation for future planning**

    Evaluation of professional development programs at the school site are conducted within a framework that includes data and knowledge about students (Design Element 1), reference to the overall school plan and goals (Design Element 2), and existing state and district policies and resources (Design Element 9). Program evaluation is also referenced against teaching standards and student content standards. Every aspect of teacher learning is linked to student learning.

Appendix D. Levels of Proficiency in Technology Skills

(Required for Preliminary Teaching Credentials)

Levels of General Computer Skills			
	Introductory	**Intermediate**	**Proficient**
General knowledge of basic hardware and software terminology G1	A. Identifies hardware components, peripherals, and their purpose B. Identifies icons, windows, and menus	C. Uses icons, windows, and menus D. Uses basic peripherals (e.g., CD-ROM, storage media, etc.)	• Incorporates general knowledge of basic hardware and software into lesson design as appropriate (e.g., vocabulary, naming and saving conventions, printing, etc.)
Knowledge of the operation and care of hardware G2	• Starts up and shuts down computer and peripherals • Uses a mouse • Inserts and ejects diskettes, CD-ROM, etc. • Uses software from a disk, hard drive, or CD-ROM • Creates, names/renames folders and files • Starts an application and creates a document • Names, saves, saves as, retrieves and revises a document • Prints documents	• Organizes the desktop • Initializes, formats, and names diskettes • Copies documents between computer and diskettes • Chooses printer location	• Allocates memory needed by applications • Accesses and changes control panels • Sets software preferences • Makes more system memory available • Performs regular maintenance • Organizes files and programs • Uses print preview and options • Opens and works with more than one application at a time • Shares files and printers on a network • Installs software • Selects and uses appropriate anti-virus software
Knowledge of basic troubleshooting techniques G3	• Restarts a frozen computer • Identifies directly connected or networked printer problems	• Troubleshoots basic hardware, software, and printing problems before accessing the appropriate level of support • Checks cables for proper attachment • Solves simple printer problems with directly connected printer	• Troubleshoots common hardware, software, and printing and network problems before accessing the appropriate level of support
Integration, student learning, and classroom management G5		• Explains various models for classroom management of technology • Cites examples of appropriate applications of technology as an educational tool	• Selects and uses effective classroom management techniques using technology in a limited number of educational settings • Selects and implements appropriate technology tools to support teaching and learning processes

Rubrics developed by the California Technology Assistance Project (CTAP) in January 2000.

Levels of User Expertise on the Internet			
	Introductory	**Intermediate**	**Proficient**
General knowledge and appropriate use of hardware and software (e.g., Web browsers and connections) G1, G5	• Launches a browser and uses the toolbar • Specifies a URL and can point and click to navigate on existing links • Changes window sizes • Views history • Accesses help file • Explains basic Internet terminology • Accesses the Internet through a modem or network	• Explains the anatomy of a URL • Configures preferences for software • Sets a homepage • Refreshes or reloads a page • Hides, displays, or configures the toolbar • Locates and opens a local file within the browser • Copies, pastes, and saves from web pages • Downloads files • Configures page setup to print citation resources	• Selects helper files/applications used to open downloaded files • Maintains and organizes favorite bookmarks • Troubleshoots address errors (i.e., 404 errors) • Uses and manages multiple windows
Communication collaboration S3, S4	• Explains use of e-mail as a means of communication	• Uses e-mail to communicate with members of a group	• Uses chat rooms, newsgroups, or threaded discussions to communicate with members of a group
Research tools S7	• Conducts basic searches	• Explains the differences between search indexes, search engines, and metasearch tools • Understands Boolean logic • Conducts natural language searches	• Uses advanced search features • Conducts multiple search strategies to locate and validate information • Uses Internet search engines as a resource for lesson development
Ethics and policies G4, S13, S14		• Explains issues surrounding Internet use in the classroom (e.g., copyright, management, student safety, AUP, etc.)	• Implements procedures and management techniques concerning Internet use in the classroom for instruction
Information literacy S5, S8	• Evaluates information for accuracy • Identifies whether a source is credible	• Organizes information • Analyzes and interprets information	• Uses a wide variety of sources • Filters information for relevancy • Incorporates information literacy strategies into lesson design
Integration, student learning, and classroom management S6, S9–S12		• Locates resources appropriate for integrating technology into lesson design	• Selects and uses Internet resources appropriately in lesson design • Selects and uses effective classroom management techniques

Levels of User Expertise with E-mail			
	Introductory	**Intermediate**	**Proficient**
General knowledge and appropriate use of hardware, software G1, G5	• Explains telecommunications terms • Explains the three main components of an e-mail address	• Configures e-mail preferences • Attaches, receives, and opens attachments • Creates and uses an address book • Recognizes and uses embedded Web links	• Manages an address book • Locates, opens, and manages attached files
Communication and collaboration S3, S4	• Starts up program, retrieves, and reads e-mail • Saves, prints, and deletes e-mail • Composes, edits, and sends new e-mail	• Uses reply to sender, reply to all, and forwarding functions appropriately • Uses cc and bcc to communicate with one person or a few people	• Employs e-mail to communicate with and provide information to students, parents, and community members
Integration, student learning, and classroom management S6, S9-S12	• Explains procedures and processes for use of e-mail in the classroom	• Describes use of e-mail in the classroom for connecting with others, such as keypals, global classrooms, parallel problem-solving, mentoring, etc.	• Designs curricular lessons that utilize e-mail as a part of the activity • Selects and uses effective classroom management techniques using e-mail in a limited number of educational settings • Selects and uses appropriate e-mail tools to support teaching and learning
Legal and ethical issues G4, S13, S14	• Explains "netiquette" • Explains issues surrounding student safety and security	• Practices appropriate "netiquette" related to e-mail • Follows up on issues related to personal safety and security	• Incorporates "netiquette" in classroom instruction • Follows student safety and security procedures in instruction

Levels of Word Processing Skills			
	Introductory	**Intermediate**	**Proficient**
General knowledge and appropriate use of hardware and software G1, G5	• Identifies word-processing terms (e.g., word processing, cursor, styles, etc.) • Opens, saves, prints, and deletes a document	• Navigates in a large document • Accesses and uses help • Previews document to identify layout problems • Uses basic proofing tools to detect errors (e.g., spellcheck, grammar check)	• Finds and replaces text • Saves word-processing documents in other file formats • Retrieves documents with the find file command
Communicate through printed media S2	• Types, selects, corrects, and deletes text • Adjusts tabs and margins • Applies and changes font, characters, and paragraph formats • Changes on-screen view mode and magnification	• Copies and pastes text within and between documents • Uses styles to change the appearance of paragraphs and outlines • Uses templates • Applies borders • Creates numbered and bulleted lists • Adds and deletes page breaks and creates headers and footers • Creates tables using built-in software assistance	• Uses word processors to create lesson plans, articles, reports, etc. • Enhances documents by inserting graphics • Incorporates drawing tools • Resizes and relocates graphics within a document • Creates templates • Formats text in columns with different fonts and colors
Integration, student learning, and classroom management S6, S9-12		• Transcribes handwritten documents into word-processed documents • Creates a simple word-processed document	• Creates enhanced word-processed documents for classroom use • Designs lessons that utilize word-processing as part of the activity

Levels of User Expertise in Desktop Publishing			
	Introductory	**Intermediate**	**Proficient**
General knowledge and appropriate use of hardware and software G1, G5	• Defines publishing terms (e.g., page layout, stories, fields, etc.) • Opens, saves, prints, and deletes a document	• Navigates in a large document • Accesses and uses help • Previews document to identify layout problems • Uses basic proofing tools to detect errors (e.g., spell check, grammar check)	• Finds and replaces text • Saves text documents in other file formats
Communicates through printed media S2	• Creates a new document • Changes document setup • Copies, cuts, and pastes text and graphics • Changes on-screen view mode and magnification • Incorporates clip art • Changes typefaces, font size, and other text attributes • Changes text alignment/justification • Identifies types of publishing software (e.g., word processing, page layout, image/graphic, etc.) • Undo unwanted changes	• Imports/ places and resizes graphics, (e.g., clip art, charts, auto-shapes, etc.) both as objects and as type • Uses suitable size, style, and number of fonts • Creates a simple shape graphic • Controls text flow around graphics • Moves, arranges, and layers objects • Creates numbered and bulleted lists • Uses guides and rulers • Creates multiple columns with text • Controls page numbering • Changes page tabs, margins, and indents • Edits line and shape style and fill properties • Creates and modifies headers and footers	• Understands elements of basic design (e.g., white space, page layout, etc.) • Saves documents in appropriate formats • Integrates various and appropriate software for desktop publishing (e.g., graphics, layout, etc.) • Incorporates digital images from external sources (e.g. cameras, scanners, Internet)
Integration, student learning, and classroom management S6, S9-S12	• Describes various types of publishing media and possible classroom applications	• Selects media to support instructional objectives	• Develops student assignments that embed elements of effective design • Plans for effective classroom management of available resources

Levels of User Expertise in Databases			
	Introductory	**Intermediate**	**Proficient**
General knowledge and appropriate use of hardware, software G1, G4, G5	• Defines database terms (e.g., records, fields, etc.) • Creates, opens, and saves a database • Selects, moves, copies, deletes, clears, and inserts fields and records	• Formats fields to reflect appropriate data (e.g., date, name, currency, etc.) • Explains differences between report and query/search/find • Uses print preview to identify print problems	• Finds and replaces data • Sorts, matches, and goes to specific records • Exports data from database • Adds header and footer
Manage records (e.g., grade book, attendance, etc.) S1	• Enters text and data into appropriate fields	• Uses find command to locate a specific record • Creates or modifies report layout	• Merges database information with word processing document to produce form letters
Communicate through printed media S2	• Sorts data to produce reports (e.g., alphabetical listings, etc.) • Formats text and numbers in record (e.g., boldface, currency, etc.)	• Creates a variety of report layouts • Sorts or defines data to print only required records (e.g., students reading at grade level)	• Imports data from other applications • Creates new layouts or edits existing layouts for specific productivity or curricular goals
Integration, student learning, and classroom management S6, S9-12	• Describes the educational uses of databases	• Identifies lessons that require the manipulation of data • Creates new databases related to content area (e.g., world populations, animal data, etc.)	• Designs curricular lessons using databases to enhance learning outcomes • Develops student assignments that require management and manipulation of a variety of data

Levels of User Expertise in Spreadsheets			
	Introductory	**Intermediate**	**Proficient**
General knowledge and appropriate use of hardware, software G1, G5	• Defines spreadsheet terms (e.g., cells, alignment, formula, etc.) • Creates, opens, and saves spreadsheets • Navigates using the mouse and tabs • Undo unwanted changes • Locates cells based on column/row addresses • Selects, moves, copies, deletes, clears, and inserts cells • Selects entire column or row • Resizes cells and rows • Changes typeface, font size, and other cell attributes	• Sorts cells • Changes text cell alignment and justification • Replicates a formula or range of cells (e.g., fill down, fill right) • Creates simple bar graphs or pie charts • Adds shading and borders • Selects charts for appropriate data representation	• Saves in a variety of formats • Imports/exports charts and data (e.g., spreadsheet to word processing, etc.) • Aligns and rotates text and numbers • Creates a variety of charts • Labels graphs appropriately
Manage records (e.g., grade book, attendance, etc.) S1	• Enters text and data into specific cells	• Creates formula cells (e.g., sum, average, etc.) • Formats cells for appropriate content such as text, decimal alignment, currency	• Utilizes grade book templates • Maintains student records
Communicate through printed media S2	• Adjusts layout and margins • Uses print preview and print document with title • Creates and edits headers, footers, and page numbers • Sets up print options for grid lines, zoom, etc.	• Prints a specific range of cells, pages, and sheets • Searches for and replaces text • Changes size, placement, and title of charts • Changes margins	• Imports/exports charts into word-processing application
Integration, student learning, and classroom management S6, S9-12	• Describes the educational uses of spreadsheets	• Creates new spreadsheets related to content area	• Designs curricular lessons requiring use of spreadsheet • Creates appropriate charts for a content lesson

Levels of User Expertise in Presentation Software			
	Introductory	**Intermediate**	**Proficient**
General knowledge and appropriate use of hardware, software G1, G5	• Defines presentation and multimedia terms (e.g., slides/cards, slide show, hyper-navigation, etc.) • Creates, opens, modifies, and saves presentations • Defines available tools (e.g., drawing, text, etc.) • Uses templates or wizards to create a new presentation • Adds new slides or cards • Inserts text, formats text, or adds text box • Uses toolbar or menus to apply formatting changes • Inserts clip art or digitized pictures	• Inserts or changes slide or card design • Navigates using scrollbar, slide sorter, menu, key commands, etc. • Switches between different page views • Rearranges the order of slides or cards • Applies backgrounds and objects appropriately • Uses available tools (e.g., drawing, text, etc.) • Incorporates sound • Defines different image types (i.e., TIFF, GIF, PCX) • Connects, configures, and troubleshoots peripheral devices for presentation	• Creates and edits navigational buttons to move through presentation • Navigation through presentation is clear and easy to understand. • Applies transitions and effects, if appropriate, to slides or cards • Incorporates hypertext links • Incorporates animations from library • Incorporates movies from library • Records sound and inserts in presentation • Incorporates clip art from other sources (e.g., Internet, scanner, etc.) • Organizes presentation resources in a folder on the desktop or server • Edits clip art (if appropriate)
Communicates through print media S2	• Prints slides	• Demonstrates understanding of basic design elements (i.e., color, design, space, and composition) • Prints using advanced printing options	• Prints handouts that enhance instructional objectives (e.g., outlines, notes, etc.)
Integration, student learning, and classroom management S6, S9-12	• Describes the educational uses of presentation software	• Organizes information in a clear, consistent way for the viewer • Creates cards or slides using effective design to enhance communication • Uses appropriate background and text colors to ensure clarity and readability	• Designs curricular lessons having multimedia to enhance learning outcomes • Follows fair use and copyright laws for text, graphics, and sound

Levels of User Expertise in Instructional Technology			
	Introductory	**Intermediate**	**Proficient**
Analyzes best practices and research findings G5, S12	• Locates learning, teaching, and communication resources related to implementation in the classroom	• Is able to locate and adapt lessons based upon best practices and research findings	• Analyzes best practices and research findings on the use of technology and designs lessons accordingly
Considers content to be taught and selects the best tech resources to support, manage, and enhance learning S5, S10	• Identifies established criteria used to evaluate digital media • Receives examples of lesson plans that integrate technology • Identifies process used to match technology with content	• Practices evaluating educational digital media using established criteria • Practices including appropriate technological resources in classroom lesson plans	• Evaluates educational digital media using established criteria • Includes appropriate technological resources in classroom lesson plans
Identifies student learning styles and determines appropriate resources S6, S9	• Is aware of learning style inventories for students • Examines a variety of technology resources for their applicability to learning styles	• Selects and uses activities to identify student learning styles • Uses a variety of technology resources in lesson plans suited to student learning styles	• Integrates appropriate technology resources and adapts lessons and classroom practice according to learning style inventory results
Demonstrates ability to create and maintain effective learning environments using computer-based technology S11	• Describes various models of technology use that enhances learning and increases efficiency and productivity	• Uses teacher productivity tools for classroom management (e.g., home-school communication, student records and grades) • Lesson plans reflect a management system for computer-based activities	• Effectively uses technology for whole-class, small group, and individual instruction • Designs classroom activities that allow all students to build upon their technology skills and increase learning • Implements management procedures that support assessment of student involvement and achievement
Demonstrates knowledge of privacy, security, and safety issues G4, S13, S14	• Explains the need for and use of copyright policy, protection of student privacy, security, and safety	• Implements established policies for safe, private, and secure practices in personal work • Personally implements established policies about copyright and plagiarism	• Implements established policies for safe, private, and secure practices in classroom • Implements policies about copyright and plagiarism in classroom

Appendix E. Matrix of Professional Teachers' Proficiency in Computer-Based Technology

Communication and Collaboration		
Factors to Consider	**Professional Profile**	**Performance Indicators**
Communicates through a variety of electronic media P2	• Identifies, selects, and uses digital communication tools appropriately. • Uses digital tools to communicate with students, parents, and community members to enhance management and learning	• Evidence of the use of a variety of communication tools based on resources available (e.g., telephone, e-mail, fax, listserv or Web page) • Evidence of the management of information using technology to increase communication, (e.g., Web pages, voice mail, homework hotlines)
Interacts and collaborates with others using computer-based collaborative tools P3	• Supports student learning through collaboration with parents, subject matter experts, educators, and others using digital tools • Participates in professional growth activities by using digital communication tools	• Evidence of sustained communication with parents, students, and/or colleagues through mailing lists, video conferencing, online staff development, shared network folders, etc. • Student projects utilize digital tools to interact with subject matter experts. • Lesson/activity plans are designed collaboratively using appropriate communication tools as a medium (e.g., e-mail, listserv, shared network folders, mailing lists, video conferences, etc.).
Collaborates with other teachers, mentors, librarians, resource specialists, and other experts to support technology-enhanced curriculum P11	• Uses digital communication tools to work with educators and subject matter experts to design classroom activities to support student learning • Seeks out and draws upon the expertise of others to support the learning process and technology-enhanced curriculum	• Student work that exemplifies evidence of active collaboration with outside experts • Interdisciplinary lessons and cross grade-level projects (see also Planning, Designing, and Implementing Learning Experiences, P5)
Contributes to site-based planning or local decision making regarding the use of technology and acquisition of technological resources P12	• Provides leadership by participating in schoolwide decision-making and learning activities that support learning through the use of technology • Actively contributes to the development or updating of site or district-based technology plans • Explores new technologies and recommends innovative educational applications appropriate to the curricular needs of the students and site	• Participation in grade-level or department activities to develop a school site technology plan • Pursues continuing education (e.g., educational technology, conference attendance, curriculum integration, online courses workshops) • Evidence of active participation in the site or district decision-making process regarding the use and acquisition of technology (e.g., grade-level technology committee, technology planning)

Planning, Designing, and Implementing Learning Experiences		
Factors to Consider	**Professional Profile**	**Performance Indicators**
Demonstrates competence in evaluating the authenticity, reliability, and bias of data gathered; determines outcomes and evaluates the success or effectiveness of the process used P4	• Evaluates authenticity, accuracy, reliability, and bias of resources to be used in the planning and designing of instructional activities • Identifies the process used to evaluate data and determines the success or effectiveness of that process • Applies information literacy competencies in professional practice	• Research on curricular resources incorporates multiple references from a variety of credible electronic and traditional sources. • Evidence of self-reflection and evaluation on the outcome and success of the process used through anecdotal records, self-reflections, journals, and lesson plan revisions
Optimizes lessons based upon technological resources available in a variety of learning locations P5	• Applies best practices and research findings on the use of technology in managing resources for specific student populations • Analyzes the needs of students and organizes appropriate and available technological resources for curricular applications • Establishes technology procedures and routines that engage all students in a variety of learning environments	• Classroom activities reflect the availability of technology tools and resources at site, community, and home. • Lesson activities use appropriate technology resources based upon specific student needs (e.g., drill and practice, simulation, video-based instruction). • Lesson activities reflect access to a variety of learning locations (e.g., one computer room, computer lab, multiple workstations in a room, and portable technologies).
Designs, adapts, and uses lessons that develop student information literacy and problem-solving skills as tools for lifelong learning P6	• Implements lessons that engage students in evaluating information, problem solving, and critical thinking to make subject matter meaningful • Facilitates activities that engage students to become self-directed learners through effective use of technology aligned with curriculum standards • Incorporates lessons using appropriate technological and traditional tools for student research, data gathering, analysis, and presentation	• Student research projects incorporate multiple references from a variety of credible electronic and traditional sources. • Student methods of utilizing valid information are analyzed for success (e.g., rubrics, student reflection, and/or bibliographic cross referencing). • Evidence that improvements to future student activities are planned (See also Assessment and Evaluation, P10) • Lesson plans indicate activities to maximize student learning by matching the most appropriate technology resources to instructional and learner needs.
Creates or makes use of learning environments inside the classroom, as well as in library media center or computer labs, that promote the effective use of technology aligned with curriculum P7	• Selects appropriate technology that supports state academic content standards • Implements effective classroom management techniques using technology in a variety of educational settings • Employs a variety of technology-based instructional strategies to enhance learning (e.g., direct, cooperative, individual, etc.) • Supports varying learning styles and modalities by integrating a variety of technological resources in lesson design for all students	• Sample technology-integrated lessons are clearly aligned with state academic content standards • Evidence of lessons that provide for equal access to technological resources for all students in a variety of locations • Sample technology-integrated lessons use technology appropriately.

Planning, Designing, and Implementing Learning Experiences		
Factors to Consider	**Professional Profile**	**Performance Indicators**
Uses technology in lessons to increase each student's ability to plan, locate, evaluate, select, and use information to solve problems and draw conclusions P8	• Engages students in the process of planning, locating, and evaluating information obtained by using technology • Designs technology-infused lessons to increase student's critical-thinking skills • Facilitates technology-infused experiences that promote autonomy, interaction, and choice • Incorporates instructional strategies to develop student skills for assessing validity and reliability of information	• Evidence of lessons that provide engaging activities for students to evaluate information, solve problems, and draw conclusions • Student projects demonstrate student's increased ability to plan in order to select and use information. • Models the use of technology to plan activities for solving problems and drawing conclusions
Demonstrates knowledge and understanding of the legal and ethical issues concerned with the use of computer-based technology G4, S13, S14	• Translates the school's acceptable-use policy (AUP) into understandable rules and procedures for students • Demonstrates and advocates legal and ethical behaviors for students and colleagues regarding the use of technology and information	• Models, teaches, and reinforces intellectual property rights and acceptable-use policies • Evidence that students are following the acceptable-use policy • Evidence of lessons that include copyright and policy citations • Student reports include appropriate bibliographic information.

Assessment and Evaluation		
Factors to Consider	**Professional Profile**	**Performance Indicators**
Uses computer applications to manipulate and analyze data P1	• Collects, organizes, and analyzes data using technology for the purpose of managing resources, learning environments, and project design • Uses technology to collect and analyze data for school instructional planning	• Evidence of the use of a gradebook spreadsheet or database program to record and report student progress • Instruction is modified based on the analysis of student mastery of data by using district-adopted student information system. • Evidence of the use of assessment tools and strategies to evaluate student activities • Customized documents for school planning use technology tools.
Uses technology to assess student learning and provide feedback to students and parents P9	• Devises project assessments that allow students and parents to monitor progress and adapt educational activities appropriately • Produces individualized learning reports of students • Shares learning reports with students and parents to provide feedback to improve purposeful student engagement in learning • Collects, interprets, and reports student performance data using technology	• Evidence of the use of electronic means to collect student data (e.g., gradebooks, web-based testing, computer-aided instruction, etc.) • Presentations are produced for a variety of audiences to illustrate student performance. • Evidence of the use of technology to create individual learning reports for parents and students
Frequently monitors and reflects upon the results of using technology in instruction and adapts lessons accordingly P10	• Analyzes the effects of technology integration on student learning and modifies lessons to better meet curricular goals • Uses technology tools to collect and analyze student data to effectively manage instruction and classroom management • Analyzes best practices and research findings on the use of technology and designs lessons accordingly	• Plans identify, manage, and organize resources available for appropriate student use. • Portfolio of progressive lesson plans indicates more effective use of technology in alignment of best practices and research findings. • Evidence of reflection on the process of monitoring, analyzing, and modifying the effective use of technology in lessons